IDEM Permit Guide:
Air Emissions: Determining Whether a Source Should Be Regulated

www.IN.gov/idem/guides/permit/air/airemissions.html

Note: The intent of this guide is to provide a basic understanding of the review process for an air permit. Because of the numerous factors that can influence the level of permitting and the permit conditions, all the complexities involved in permitting review cannot be fully addressed in this guide. Therefore, persons intending to engage in activities which may result in air emissions of regulated pollutants are advised they must be in compliance with the U.S. Code of Federal Regulations (scroll down to Subchapter C–Air Programs) and the Indiana statutes and rules (Title 326 of the Indiana Administrative Code; 326IAC) regarding Air Pollution Control, including the December 25, 1998, revisions to 326 IAC Article 2, the rules regarding air construction permits.

Overview of Air Permitting

In its effort to minimize the emissions of regulated air pollutants, IDEM issues various types, or levels, of construction and operating permits. All sources of regulated air pollutants could potentially need a permit from IDEM.

While the *potential to emit* is perhaps the most important factor in determining if a source needs a permit, and what type, it is not always the only factor considered. Location — whether the source is, or will be, located in an attainment or non-attainment area — can be a factor. In addition, there are sources that are identified in the rules as being automatically required to be permitted at a specific level. There also can be special requirements regarding specific types of emissions, such as the various levels of control technology required on volatile organic compound emissions.

What is a source?

For state air permitting purposes, a source is an aggregation of one or more emission units, pollution control devices and associated origins of emissions of regulated pollutants which are all related to the production of a specific product(s) and are located on one piece of property, or contiguous or adjacent properties that are owned by the same person or are under common control (See 326 IAC 1-2-73).

Potential to Emit: How is it determined whether a source needs a permit, and if so, what type?

The appropriate level of permitting required by any emission source is based primarily on

its *potential to emit.* The *potential to emit* (See 326 IAC 2-1.1-1(16)) is the total potential emissions of any regulated pollutant which could result from operating under a "worst case operating scenario," running twenty four hours a day (with no pollution control equipment), 365 days a year at full capacity. Once a source's *potential to emit* has been determined it can be used to determine the level of permitting required, and the permitting process can move forward. IDEM staff perform the *potential to emit* calculations for all air registration or permit applications.

What are the Regulated Pollutants?

The federal standards first set forth in the Clean Air Act (CAA) of 1970 are the basis upon which Indiana has established emission thresholds and regulations for what are now known as the regulated pollutants. The 1970 CAA identified the criteria pollutants, established the first of an ongoing series of New Source Performance Standards (NSPS), and set the National Emissions Standards for Hazardous Air Pollutants (NESHAP). The same pollutant may be regulated under more than one of these three regulatory standards. For example, particulate matter is both a criteria pollutant and is regulated under NSPS for certain types of sources while lead is both a criteria pollutant and is regulated under NESHAP.

The Criteria Pollutants are those for which National Ambient Air Quality Standards have been established, and their precursors. The Criteria Pollutants, which are used to calculate whether a geographical area (county or urban area) is in "attainment" or "non-attainment" with the standards of the Clean Air Act, are:

- Ozone (low level or at ground level) *Harmful to lung tissue and plants.*

- Volatile Organic Compounds (VOCs) *Some VOCs are also toxic.*

  All carbon based compounds except; carbon monoxide, carbon-dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, vegetable oil, methylene chloride, methane, ethane, perchloroethylene, methyl chloroform, and certain chlorofluorocarbons and hydro-chlorofluorocarbons. VOCs contribute to **OZONE** formation; that is, when VOCs emitted into the air mix with water vapor and oxygen in the presence of sunlight the subsequent chemical reaction produces ozone.

- Nitrogen dioxide (NO2) and oxides of nitrogen (NOX) *A contributor to acid rain.*

  Often a product of incomplete combustion, they too can contribute to the formation of **OZONE**.

- Carbon monoxide (CO) *Those with heart conditions are particularly sensitive to CO.*

  Also a product of incomplete combustion.

- Sulfur dioxide (SO2) *A contributor to acid rain*.

  A product of fossil fuel combustion.

- Particulate matter (PM) or particulate matter smaller than 10 microns (PM-10). (Dust and soot) *Harmful irritant to lungs and bronchial membranes.*

- Lead (Including both lead and lead compounds).

The New Source Performance Standards (NSPS) establish emissions limits which apply to new or modified sources. NSPS are developed on an industry specific, or process specific, basis and may regulate either criteria pollutants or other air pollutants. Although NSPS subject certain source categories to specific levels of emissions of these pollutants, the NSPS pollutants themselves are regulated regardless of whether they are emitted from a NSPS listed source. The NSPS pollutants are:

- Dioxins and furans
- Fluorides
- Hydrogen Chloride
- Hydrogen Sulfide
- Sulfuric Acid Mist
- Total Reduced Sulfur
- Reduced Sulfur Compounds
- Total Suspended Particulates

The Hazardous Air Pollutants

Hazardous Air Pollutants are also known as HAPs. They are regulated under the National Emissions Standards for Hazardous Air Pollutants (NESHAPs), which were established in 1970. They initially regulated arsenic, asbestos, beryllium, benzene, mercury, radio nuclides (including radon), and vinyl chloride. The 1990 Amendments to the Clean Air Act expanded the list to 189 Hazardous Air Pollutants (HAPs).

What types of air-related activities are regulated by IDEM through the use of air permits?

Construction Permits

Many new sources of air emissions must undergo New Source Review (NSR), except those sources whose *potential to emit* any of the regulated pollutants is below the threshold of regulatory concern are exempt from NSR. Any non-exempt new source must, at a minimum, register with IDEM and be issued a Registration which includes operating conditions. New sources with a *potential to emit* which is above registration levels must also obtain approval under a higher level of review prior to construction. The type of approval document that will be issued will depend on the *potential to emit*.

Operating Permits

All new sources obtaining construction permits from IDEM also are transitioned into an operating permit program. IDEM continues to issue operating permits to existing sources, as required by the 1990 Clean Air Act Amendments (CAAA), and will complete issuance of all CAAA required permits by December 31, 2000. In addition, IDEM has established two alternative operating permit programs. The Source Specific Operating Agreement (SSOA) program and the Permit-by-Rule program.

Amendments, Modifications, or Revisions to Existing Operating Permits

Existing sources intending to make changes to production processes, emission units, or air pollution control equipment may need IDEM approval in the form of an amendment, modification, or revision to their operating permit.

Other Factors Determining Permitting Level (Besides *Potential to Emit)*

Each of these types of air permitting activities has its own permit hierarchy, or series of permits regulating increasingly higher levels of *potential to emit* of the various regulated pollutants. Nonetheless, some specific types of activities automatically are placed at a certain permitting level based solely on the nature of the activity. Or a source may be placed at a certain permitting level because of where the source is located and because of the type of pollutant being emitted.

As an example of how source activity may determine a source's permitting level, most sources being constructed within an attainment area (an area attaining the standards for criteria pollutants under the Clean Air Act) need not undergo the more stringent federal PSD (Prevention of Significant Deterioration) for a construction approval unless their *potential to emit* for any one of the criteria pollutants is greater than 250 TPY (tons per year). However, if a source in an attainment area is one of the 28 major air sources categories, then *potential to emit* for any criteria pollutant of greater than 100 TPY can trigger the requirement for a federal PSD review.

Similarly, as an example of how source location and pollutant type may determine the source's permitting level, a source of VOCs (volatile organic compounds, a criteria pollutant) located within an attainment area is not considered to be a major source, and are therefore not required to obtain a Title V Operating Permit ,so long as its *potential to emit* VOCs, or any other criteria pollutant, is less than 100 TPY. However, sources in non-attainment areas (an area not attaining the standards for the criteria pollutants under the Clean Air Act) may be classifed as major sources even if their potential to emit is lower than 100 TPY.

Disclaimer

This permit guide is intended to provide background information which should be useful in planning for a particular project that may require an environmental permit. It does not substitute for consultation with the appropriate regulatory agency and/or the appropriate rules or statute.